REMARKS

Applicants have amended their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants have amended claim 1 to recite that the electroconductive ultrafine powder is made of a material selected from the group consisting of stannic oxide doped with antimony, indium trioxide doped with tin, zinc oxide doped with aluminum or gallium, and barium plumbate. Note, for example, the sole full paragraph on page 5 of Applicants' specification. In light of amendments to claim 1, claim 4 has been cancelled without prejudice or disclaimer.

Moreover, Applicants are adding new claims 12-16 to the application. Claims 12 and 13, each dependent on claim 1, respectively recites that the electroconductive ultrafine powder is made of stannic oxide doped with antimony, and recites that this powder is acicular, with a minor axis in the range of 5 nm to 70 nm; and claims 14 and 15, dependent respectively on claims 13 and 14, define an aspect ratio of the acicular electroconductive ultrafine powder. Claim 16, dependent on claim 1, further defines the dimensions of the minor axis.

In connection with new claims 12-16, note, for example, pages 5 and 6 of Applicants' specification.

The acknowledgment by the Examiner of Applicants' election of the Group I claims, set forth on page 2 of the Office Action mailed January 25, 2007, is noted. The undersigned also notes the statement by the Examiner therein that the rejoining of the non-elected claims upon allowance of the elected invention will be dealt with in accordance with Manual of Patent Examining Procedure (MPEP) 821.04. Upon allowance of the elected claims, it is respectfully requested that at least those claims

ultimately dependent on the allowed claims (e.g., claims 7-11) be re-joined in the application, for issuance in a U.S. patent based thereon.

Contentions by the Examiner concerning the listing of references in the specification, set forth in the paragraph bridging pages 2 and 3 of the Office Action mailed January 25, 2007, are noted. Filed concurrently herewith is an Information Disclosure Statement satisfying requirements of 37 CFR 1.97 and 1.98, and including a copy of the prior art described in the sole full paragraph on page 2 of Applicants' specification, together with a computer-generated English translation thereof and an English abstract thereof. Consideration of this document and Abstract and translation upon further examination of the above-identified application is respectfully requested.

Applicants respectfully submit that all of the claims now presented for consideration by the Examiner patentably distinguish over the teachings of the prior art applied by the Examiner in rejecting claims in the Office Action mailed January 25, 2007, that is, the teachings of the U.S. patents to Martinez, et al., No. 5,294,374 and to Lewis, et al., No. 5,424,129, and the MTI Data Sheet, under the provisions of 35 USC 102 and 35 USC 103.

As to the claims presently being considered on the merits, it is respectfully submitted that the teachings of the applied references would have neither taught nor would have suggested such insulated ultrafine powder as in the present claims, including, inter alia, the electroconductive ultrafine powder which is made of a material selected from the group consisting of stannic oxide doped with antimony, indium trioxide doped with tin, zinc oxide doped with aluminum or gallium, and barium plumbate, such powder having a form and minor axis dimension as in claim

1, and with an insulating film applied onto such electroconductive ultrafine powder. See claim 1.

In addition, it is respectfully submitted that the teachings of the applied references would have neither disclosed nor would have suggested such insulated ultrafine powder as in the present claims, having features as discussed previously in connection with claim 1, and, moreover, the specific material of the electroconductive ultrafine powder as in claim 12; and/or the relative dielectric constant of the insulating film, applied onto the electroconductive ultrafine powder, as in claim 2; and/or material of the insulating film as in claim 3; and/or wherein the insulating film has a thickness as in claim 5; and/or wherein the electroconductive ultrafine powder is acicular, with a minor axis thereof being in the range of 5-70 nm (see claim 13), and also wherein such powder has an aspect ratio of 2-100 (see claim 14), more specifically 10-40 (see claim 15); and/or wherein the minor axis has a size as set forth in claim 16.

The present invention is directed to insulated ultrafine powder, well suited to the formation of an IC package, a module substrate, and an electronic part integrated with a high dielectric constant layer, particularly well suited to formation of an inner layer capacitor layer of a multi-layer system wiring substrate and also useful for miniaturizing built-in antennas and electro-magnetic adsorption sheets, units and panels which prevent electronic wave interference.

There has been proposed, as a high dielectric constant layer on a wiring substrate for removing high frequency noise, a resin composite material incorporated with at least 65 vol% of a ferroelectric material such as barium titanate as a high dielectric constant filler, preferably forming a continuous layer of the high dielectric constant filler inside the composite material. This proposed composite has a

relatively large amount of ferroelectric material, the reason for the necessity of such a large amount being set forth in the first paragraph on page 3 of Applicants' specification. However, with a composite containing such a large amount of ferroelectric material filler, processability and moldability are impaired.

Against this background, and as a result of extensive research and investigation made by the present inventors on formation of a continuous layer of a filler in a resin material, the present inventors have found that objectives of the present invention are achieved through use of an insulated ultrafine powder as in the present claims, having an insulating film applied on electroconductive ultrafine powder, the electroconductive ultrafine powder having a shape and minor axis dimension in the present claims, and wherein such powder is made of a material selected from the group consisting of stannic oxide doped with antimony, indium trioxide doped with tin, zinc oxide doped with aluminum or gallium, and barium plumbate. Through use of materials for the electroconductive ultrafine powder as in the present claims, diffusion of metallic atoms from the ultrafine powder into media of an insulant, thereby lowering the insulating properties of the resin composite material formed using the ultrafine powder, can be avoided. Moreover, particularly desirable is stannic oxide doped with antimony, from the aspect of manufacturing cost. Note the sole full paragraph on page 5 of Applicants' specification.

Furthermore, by utilizing electroconductive ultrafine powder in the form as in the present claims, having a minor axis in a range of 1-100 nm, deteriorated electroconductivity due to quantum size effect can be avoided, while a failure in forming a continuous layer, where relatively small amounts of powder is included in the resin composite material, can be avoided. Note the paragraph bridging pages 5 and 6 of Applicants' specification.

In addition, through utilizing powder in an acicular form, less amount of power need be added to the resin composite material in order to form a continuous layer. Note paragraph bridging pages 5 and 6 of Applicants' specification.

Furthermore, through use of an insulating film having a thickness as in various of the present claims, a desired insulating effect is achieved, without having an adverse effect on the dielectric constant of the resin composite material formed utilizing such powder. See pages 6 and 7 of Applicants' specification.

Lewis, et al. discloses toner and developer compositions, including negatively charged toners containing composite metal oxide particles. The composite metal oxide particles provide or assist in providing a pronounced negative charge to the toner. Note column 1, lines 7-10 and 24-29. The composite metal oxide particles have a first metal oxide forming a core particle and a second metal oxide forming an outer layer on the metal oxide core particle, chemical formulas for materials of the first and second metal oxides being set forth in the paragraph bridging columns 4 and 5 of this patent. Note also column 8, lines 12-19 of Lewis, et al., disclosing examples of metal oxide core particles being selected from the group consisting of SnO_2, TiO_2, SiO_2, Al_2O_3 and CeO; and examples of metal oxide core surface coating metal oxides being described in column 8, lines 15-19, and being selected from the group consisting of tin oxide, silicon oxide, titanium oxide and aluminum oxide, with the metals of the core and surface coating being different.

It is respectfully submitted that Lewis, et al. would have neither taught nor would have suggested such insulated ultrafine powder as in the present claims, including, inter alia, the material of the electroconductive ultrafine powder (that is, a material selected from the group consisting of stannic oxide doped with antimony, indium trioxide doped with tin, zinc oxide doped with aluminum or gallium and barium

plumbate), and advantages achieved thereby; and/or the other features of the present invention as discussed previously, including minor axis dimension, and advantages thereof.

The MTI Data Sheet describes Al nanopowder, partially passivated with oxygen (about 10%) for safe shipping.

It is respectfully submitted that this Data Sheet in connection with aluminum nanopowder would have neither taught nor would have suggested the insulated ultrafine powder including the electroconductive ultrafine powder being made of the material as in claim 1, and/or other features of the present invention as discussed previously, including minor axis dimensions, and advantages thereof.

It is respectfully submitted that the additional teachings of Martinez, et al. would not have rectified the deficiencies of the MTI Data Sheet, such that the presently claimed invention as a whole would have been obvious to one of ordinary skill in the art.

Martinez, et al. discloses non-linear electrical resistance materials and a method of preparing such materials, useful for protecting electrical equipment and circuits against transient voltage surges. The materials include conductive particles which are preferably either coated or uncoated metal particles, as described in column 9, lines 49-57; this patent discloses that conductive particles such as metals, including nickel, may be provided with a thin semiconductor coating, preferably by oxidation. This patent also discloses that aluminum may be coated with different oxides or with its naturally occurring oxide, both of which are insulative; and that iron may be coated with ferric oxide or ferrosoferric oxide. Note column 9, lines 49-55 and 60-63. This patent goes on to disclose that a preferred range of coating thickness for the conductive particles is from 10-5,000 Angstroms depending on end-

user application, with exemplary thickness of oxidized coatings on nickel being 200 Angstroms and 1,600 Angstroms. Note column 10, lines 23-27.

Initially, it is respectfully submitted that the teachings of Martinez, et al. would not have been properly combinable with the teachings of the MTI Data Sheet. Thus, the MTI Data Sheet is concerned with providing aluminum nanopowder, which is uncoated (a partially passivated coating with oxygen being used for safe shipping). Martinez, et al. is concerned with providing non-linear electrical resistance materials having values for protecting electrical equipment and circuits against transient voltage surges. It is respectfully submitted that one of ordinary skill in the art concerned with in connection with the MTI Data Sheet would not have looked to the teachings of Martinez, et al. In other words, it is respectfully submitted that these two documents are directed to non-analogous arts.

In any event, noting differences between descriptions of the materials in the MTI Data Sheet and in Martinez, et al., it is respectfully submitted that there would have been no proper motivation for combining the teachings of these references as applied by the Examiner. Without proper motivation, it is respectfully submitted that the combination of teachings of these references is improper.

In any event, even assuming, arguendo, that the teachings of the MTI Data Sheet and Martinez, et al. were properly combinable, such combined teachings would have neither disclosed nor would have suggested the presently claimed subject matter, including, inter alia, material of the electroconductive ultrafine powder as in the present claims, and/or other features including minor axis size, and advantages thereof.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently in the application are respectfully requested.

To the extent necessary, Applicants hereby petition for an extension of time under 37 CFR 1.136. Kindly charge any shortage of fees due in connection with the filing of this paper, including any extension of time fees, to the Deposit Account of Antonelli, Terry, Stout & Kraus, LLP, Account No. 01-2135 (case 395.43509X00), and please credit any overpayments to such Deposit Account.

Respectfully submitted,

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